M36
#.11
2d set

MARYLAND FISHERIES

PUBLISHED BY CONSERVATION DEPARTMENT OF MARYLAND

No. 11 JULY, 1931

CONTENTS

Page

THE GROWTH OF THE PACKAGED-FISH TRADE 1
TRI-STATE CONFERENCE RELATIVE TO UPPER POTOMAC RIVER 8
OYSTERS SPAWN IN BAY WATERS 12
CONTRACT FOR BIOLOGICAL LABORATORY AWARDED 14
HIGH MINERAL CONTENT IN CRAB MEAT 14

EDITORIAL

CONSERVE THE SPONGE CRAB 10

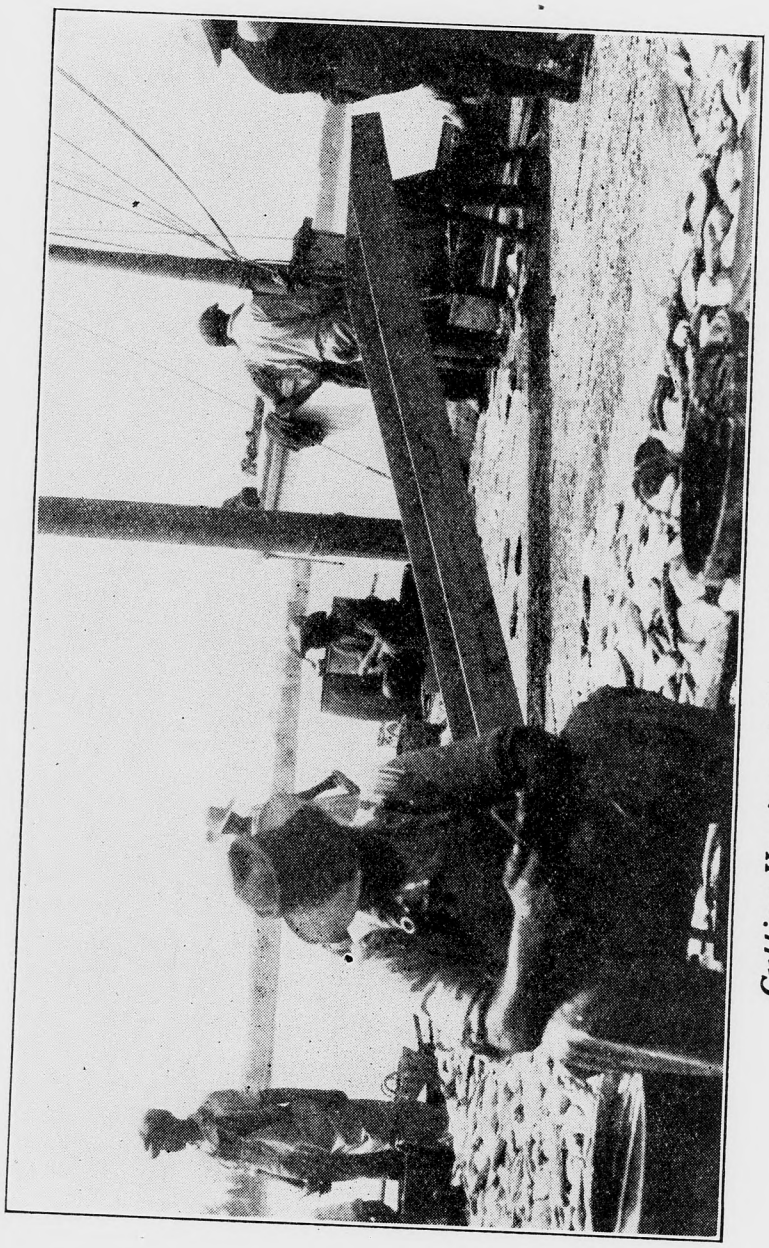
THE GROWTH OF THE PACKAGED-FISH TRADE

A RECENT ISSUE of *Fishing Gazette* carries a most interesting article by R. H. Fiedler, Chief of the Division of Fishery Industries of the United States Bureau of Fisheries, relative to the growing importance of the packaged-fish trade in the United States. This industry has developed from a production of about 50,000 pounds in 1921 to the unbelievably large figure of 80,000,000 pounds in 1930. Quoting the article in part, Mr. Fiedler states:

"Modern housewives should be prepared to open not only hermetically sealed fishery products in cans, but also fresh, frozen and cured fishery products sealed in wrappers, cartons, paper cups, and the like, in addition to some which may be packed in tin containers.

"A corps of chemists, bacteriologists, mechanical and refrigeration engineers, economists, and others are constantly at work to solve the technical, mechanical and marketing problems of this industry, and strides made by them in solving these problems have been of far-reaching importance. In fact, these strides have been so rapid that other food industries are looking toward the packaged-fish industry for guidance, especially those engaged in marketing frozen foods products. It will be the purpose of this article to review the progress made during the past year.

"The packaged-fish industry was developed to overcome difficulties surrounding the home preparation of fishery products, and



Cutting Herring—A Scene Along The Potomac River

M36
#11
2d set

MARYLAND FISHERIES

PUBLISHED BY CONSERVATION DEPARTMENT OF MARYLAND

No. 11 JULY, 1931

CONTENTS

Page

THE GROWTH OF THE PACKAGED-FISH TRADE 1
TRI-STATE CONFERENCE RELATIVE TO UPPER POTOMAC RIVER 8
OYSTERS SPAWN IN BAY WATERS 12
CONTRACT FOR BIOLOGICAL LABORATORY AWARDED 11
HIGH MINERAL CONTENT IN CRAB MEAT 14

EDITORIAL

CONSERVE THE SPONGE CRAB 10

THE GROWTH OF THE PACKAGED-FISH TRADE

A RECENT ISSUE of *Fishing Gazette* carries a most interesting article by R. H. Fiedler, Chief of the Division of Fishery Industries of the United States Bureau of Fisheries, relative to the growing importance of the packaged-fish trade in the United States. This industry has developed from a production of about 50,000 pounds in 1921 to the unbelievably large figure of 80,000,000 pounds in 1930. Quoting the article in part, Mr. Fiedler states:

"Modern housewives should be prepared to open not only hermetically sealed fishery products in cans, but also fresh, frozen and cured fishery products sealed in wrappers, cartons, paper cups, and the like, in addition to some which may be packed in tin containers.

"A corps of chemists, bacteriologists, mechanical and refrigeration engineers, economists, and others are constantly at work to solve the technical, mechanical and marketing problems of this industry, and strides made by them in solving these problems have been of far-reaching importance. In fact, these strides have been so rapid that other food industries are looking toward the packaged-fish industry for guidance, especially those engaged in marketing frozen foods products. It will be the purpose of this article to review the progress made during the past year.

"The packaged-fish industry was developed to overcome difficulties surrounding the home preparation of fishery products, and

also to market a product of uniform high quality. These difficulties were overcome by marketing in packages consumer portions of prepared fishery products—these being of uniform high quality and adaptable for consumption in the home without further preparation other than cooking. A later phase of the industry was developed to overcome the adverse factors of time and place by freezing the packaged product, thereby making it a staple article suitable for distribution at any place at any time. A further phase of the industry, developed to more completely overcome the difficulty of preparation in the home and at the same time give to the fish a distinctive flavor, was accomplished by smoking or kippering the packaged product.

WHAT IS A PACKAGED FISHERY PRODUCT?

"What constitutes a packaged fresh or frozen fishery product? It may be a fillet, steak, pan-dressed fish, stick, or manufactured steak and the meats of shell-fish, etc. At the one extreme is the manufactured steak, which is the clear edible meat of the fish, and which is practically boneless. At the other extreme is the pan-dressed fish which has only the head, tail, viscera, scales, and fins removed. Small fish may be pan-dressed by removing only the head and viscera. In between these extremes come the fillet, the crosswise cut or steak, the stick, and the meat of shell-fish. A market exists for every type of the above prepared products.

"Consumers generally are not averse to large bones or those easily detected, although most consumers hate to pick out tiny fin bones, making it desirable for the packer to remove them. Some packers remove the skin. This may be a proper procedure with certain types of fish, especially where it detracts from the appearance. However, the skin of fish has certain qualities which make it valuable for food. In this connection it is interesting to note that research during the past year conducted at the Atlantic Biological Station, St. Andrews, N. B., by Dr. S. A. Komarov, of McGill University, has shown that the skin of haddock is valuable for inciting a more copious digestive juice. It has been found that fish causes a greater secretion of this juice than does meat, and this, together with its tenderness, makes it a very easily and quickly digested food. According to the work of Dr. Komarov the skin of the fish causes about 50 per cent. more gastric juices to be secreted than does the flesh of the fish. This is an important consideration for physicians, in that they can now recommend to their patients that they should eat the skin of the fish as well as the flesh when a full amount of gastric juice is to be assured to make the stomach active in its digestive functions.

MAGNITUDE OF THE INDUSTRY

"That the packaged-fish industry has met with success is revealed by figures released by the Federal Bureau of Fisheries. Those for 1930 show that there are now about 128 packing houses

engaged in this industry—16 more than operated in 1929. Their production in 1930 of fresh, frozen, and smoked fishery products amounted to over 80,000,000 pounds, valued at $12,500,000. It is estimated that 200,000,000 pounds of raw fish were used in the manufacture of these products.

"In the preparation of the above products it is estimated that 500 salaried employees and wage earners were employed, who received $600,000 in salaries and wages. In addition to this personnel, the industry has been responsible for a great increase in the fishing fleet, which in turn has provided employment for hundreds of fishermen, boat and vessel builders, cordage and net makers, ship chandlers, and others.

"Of the total 1930 production of packaged fish, 55,174,823 pounds, or 69 per cent., were marketed fresh. This is slightly less than the quantity marketed in this manner in 1929. The second most popular method for marketing was frozen, the production of this style in 1930 amounting to 22,216,131 pounds, or about 28 per cent. of the total. This is a slight increase over the amount marketed frozen in 1930. The remainder of the output was marketed smoked.

"Considered according to method of preparation, fillets were most important and accounted for 73,753,075 pounds, valued at $11,607,880, or 92 per cent. of the total. Other methods of preparation were pan-dressed fish, steaks, and sticks. In the oyster, scallop and abalone industries, only the meats are packaged. In the shrimp industry, while the general rule is to package the headless green shrimp for freezing, there are times when the cooked meats of the shrimp are packaged. The latter are marketed mainly fresh.

"By far the most favored fish for packaging is haddock, which accounted for 78 per cent. of the total output. Cod was a poor second, accounting for only 8 per cent. Other favored species packed were: hake, with 3 per cent.; shrimp, with 2 per cent.; cusk, with 2 per cent.; and squeteague, or "sea trout," with 1 per cent. of the total.

"The center of production for packaged fish is in the New England section, where in the States of Maine, Massachusetts, and Connecticut 86 per cent. of the output was manufactured. The principal species packed here were haddock, cod, cusk, and hake. The Middle Atlantic section, extending to North Carolina, accounted for 10 per cent. of the pack. Here the packing plants, which were located in the States of New York, Virginia, and North Carolina, utilized chiefly haddock, cod, squeteague or "sea trout," and croaker. Packing plants in the States of Florida, Alabama, and Texas, in our South Atlantic and Gulf sections, accounted for 2 per cent. of the total, utilizing chiefly shrimp and groupers. In Pennsylvania, Ohio, and Michigan 1 per cent. of the total was

packed, mainly from blue pike. In Washington, Oregon and California 1 per cent. of the total was packaged. Here quantities of halibut, salmon, sablefish, and abalone were prepared.

"*Oysters.*—Packaged shucked fresh oysters have been marketed for several years in units suitable for home consumption. However, the distribution of this product is limited to the time when oysters are in season, which is during the fall, winter, and early spring. In an effort to make fresh oysters a more staple article of commerce, and extend the season of consumption, quick-frozen packaged oysters made their bow to the trade in 1930.

"One method of preparing shucked oysters for freezing is by placing them in water- and vapor-proof transparent paper envelopes, which hold about one pint, or approximately one pound. These are made airtight by folding one end several times and then sealing. It is most important that these envelopes be vapor-proof, as air will oxidize the frozen product, causing it to discolor, and also cause the contents to lose weight by evaporation. In view of this it may be found desirable to pack frozen oysters under vacuum. The envelopes after being filled with oysters are placed in a waxed carton, which is almost completely filled. The carton is then wrapped in transparent paper and made air-tight by sealing all seams. The whole is then quick-frozen at a temperature of about 50° below zero F. After freezing the cartons are packed in corrugated fibre-board shipping containers.

"Marketing packaged quick-frozen shucked oysters need not interfere with the life cycle of the oyster, for surplus stocks taken during the winter months can be frozen and held pending sale in the summer when fresh stocks are of poor quality due to spawning. Improvements in the distribution of frozen food products will assure oysters having the best care en route from packers to consumers, thus providing the public with a product which has hitherto been denied them during the summer.

"It is the general conception that oysters are not a summer food. On the contrary, they make an ideal food for this time of the year for they are easily digested. In addition, oysters contain most of the minerals, proteins, and other ingredients needed by the body, lacking only starch to make them a complete food. Oysters are also rich in vitamins A, B, C, and D. When eaten raw one obtains the full benefit of these vitamins. For these reasons raw oysters are suitable for summer use, and when served on ice should appeal to the most discriminating taste. For this purpose the newly patented "ice shell" should be of use. Or, if a warm dish is desired at the summer meal, an oyster stew should make an ideal dish.

"Should oysters be consumed on a year-round basis, on a scale comparable with the consumption when they are in season it would mean an increase to the oyster industry of 50 per cent.

The seasonal sales now amount to about $17,000,000, extending this one-half would make the annual revenue around $25,000,000.

"For some time consumer portions of shucked fresh oysters have been marketed in tin packages holding one pint. During the past year several new types of containers were tried for marketing fresh oysters. Paper cups holding a half-pint and one pint have been used in this venture. The tops of these cups are fitted with close-fitting lids. These units can be printed with a trade-mark or other copy. The cups after being filled are placed in corrugated fibre-board containers, which are resistant to liquids. These are sealed with water-proof gummed tape and placed inside a wooden box of such dimensions as to allow space for cracked ice around the four sides and the top of the fibre-board case. Cleats keep the case in place. Shipments on long hauls need to be reiced in transit.

"It is understood that some packers of crab meat and soft-shell crabs in the Chesapeake Bay region have been studying various quick-freezing systems during the past year with the idea of adapting a system to the preservation of these products.

RETAIL DISTRIBUTION

"The retail distribution of fresh packaged fishery products is on a fairly well organized basis. Usually these products are shipped directly from the producer to the retail outlet, where they generally are displayed in attractive cabinets, or in their own shipping case and container. These shipments usually are refrigerated when on display by the use of water ice or carbon dioxide ice. Some dealers display these fresh fishery products in mechanically refrigerated cabinets together with meats and other perishable commodities.

"As fresh packaged fishery products are marketed within a day or two after receipt, the problem of storage is of no great consequence. On the contrary, the holding of frozen foods in retail stores is more of a problem. It is the intention of frozen-food manufacturers to market these products every day in the week, and thus it is necessary that some type of refrigerated cabinet be designed which will do this efficiently and economically. Up to the present time to the knowledge of the writer, this problem has not been satisfactorily solved to meet the requirements of all concerned. Thus, the retail distribution problem remains as the one big problem and upon its proper solution the future of the frozen packaged-fish industry depends to a great extent.

"At present most of the output of frozen packaged-fish undoubtedly is marketed in the defrosted condition. True, early morning shoppers may get the frozen product, but, as a rule, most of them are marketed defrosted.

"A sales campaign conducted by one of the manufacturers of frozen foods has revealed a gratifying public acceptance of these

foods in the frozen state. In this campaign the frozen products were sold from low temperature storage cases, which displayed them under glass. As the campaign continued, many repeat sales were made. This campaign has pointed the way and the problem now requiring attention is to equip a substantial number of the 400,000 retail outlets in this country with the proper refrigerated cabinet,—this to be not too expensive, and one which will not consume the profits by its upkeep.

"Until grocery or other food stores become more universally equipped with suitable storage and display cabinets, it may be advantageous to effect distribution of packaged fish from drug and dairy stores, many of which are equipped with mechanically refrigerated cabinets. It is understood that the compartments of these cabinets are so constructed that odors do not penetrate from one to another, thus making them ideal for this trade. These cabinets are used in many types of retail food stores in large cities, but in the smaller towns they are generally used only in drug or dairy stores. Census figures reveal that over one-half of our population lives in the country, or in cities under 2,500. Further, it has been estimated that 40 per cent. of the drug stores in this country are located in communities of less than 5,000 people, and that a majority of these are equipped to market frozen foods. What a vast outlet this offers for the retail distribution of frozen packaged fish!

"In an article prepared by the writer several years ago, on the packaged-fish trade, mention was made that drug stores offered a possible outlet for packaged frozen fish. Up to this date, however, I have yet to learn of such products being marketed in these stores, although several weeks ago I read a news item which stated that packaged frozen meats were being retailed in a drug store in Pittsburgh, Pennsylvania.

"At present, effort is directed mainly to marketing frozen packaged fishery products in the large cities. I know of three small towns in central Pennsylvania, having a population of around 3,000 each, that rarely ever see fresh fish. Shell-fish, such as oysters, are almost unknown there except at Thanksgiving and Christmas. Yet each of these towns has several stores already equipped with mechanically refrigerated storage cabinets, making them ideal outlets through which to sell package fish and shell-fish. These towns are less than 200 miles from the seacoast.

"Perhaps the packer of frozen packaged fish will develop some system of retail distribution patterned after that being used in the distribution of frozen citrus juices. These juices are quick-frozen in paper cups at points of production, then packed in shipping containers and sent under refrigeration to central distributing points for storage. As demand warrants they are withdrawn from these warehouses and distributed in a frozen condition to homes along with deliveries of milk. This insures the product

being frozen solid when delivered which would be an ideal situation for the distribution of frozen fish products and at the same time not place dependence upon distribution through retail stores. Whether some such system can be developed for marketing frozen packaged fish is problematical. However, this system has its merits, and it is offered here as a possible remedy to overcome the difficulties surrounding the distribution through retail stores. A modified method of this system for marketing fish is now being used in a large West Coast city.

"According to a leader in the frozen food industry, it is destined to become a billion-dollar industry within the next decade. What portion of this will represent the value of the frozen fish will be determined largely by whether quality and service are maintained, for it must be borne in mind that fish was packaged originally to provide consumers with a product of uniform high quality by first obtaining raw supplies of high quality, then preparing them and protecting this manufactured product by an outer covering. Packaging will not improve the condition of the fish; manufacturers will do well to make that fact their watchword."

COMMISSIONERS CONFER ON POTOMAC SITUATION

ON May 29 the Conservation Commissioner left Annapolis on the Steamer Governor R. M. McLane for Potomac River to inspect the local boats of the Patrol Fleet stationed on the Potomac. This work was carried out on May 30 and followed by a a conference at Colonial Beach with Inspector J. G. Meflin of the Virginia force. Arrangements were made at that time to send Deputy Commander Wise of the patrol boat Kent up the Potomac with the Virginia Inspector to prevent catching of shad after June 1.

On May 31 Commissioners Chinn and Earle met at Warsaw, Virginia, the home of the former, to talk over Potomac River problems. It was agreed that in order to protect the young growth of oysters and seed oysters in the river above Blakistone Island, both states would have to put on some fast patrol boats at the beginning of the next oyster season, in order to prevent handscraping. It was further agreed that every effort should be made to prevent the use of patent tongs, and if necessary, Virginia would consider suitable legislation to stop this method of catching oysters in the Potomac, as it is believed that patent tongs are very destructive to the oyster bottoms, perhaps more so than dredges.

It was the opinion of Commissioner Chinn that the Potomac River would make a remarkable comeback if given full protection, even if the two states are unable to replant the oyster bars with seed oysters and shells. The two Commissioners will inspect the oyster grounds in the early part of the oyster season and this will be followed by another careful inspection in the autumn of 1932, after which recommendations will be made to their respective Governors as to the future policy to be pursued with regard to Potomac River.

TRI-STATE CONFERENCE RELATIVE TO UPPER POTOMAC RIVER

IN the May issue of MARYLAND FISHERIES letters were published from the Attorney-General of West Virginia and the Attorney-General of Maryland, dealing with fishery rights of the upper Potomac River with relation to the citizens of Virginia, West Virginia and Maryland. Since the publication of these letters considerable controversy has arisen on the subject, which prompted the Conservation Commissioner of Maryland to extend an invitation to the officials of Virginia and West Virginia, as well as the U. S. Commissioner of Fisheries and a few leading men in the District of Columbia, interested in fish conservation, to meet at the Hotel Raleigh, July 9, for a conference on this subject.

In response to this invitation a good representation from the three states, as well as the Government, was present. In addition to the Conservation Commissioner from Maryland, E. Lee LéCompte, State Game Warden, H. H. Johnson, chief clerk, Abel Wolman, chief engineer of the State Department of Health, and Wm. L. Marbury, Jr., Assistant Attorney-General, were on hand. From the Commonwealth of Virginia came Judge Wm. S. Snow and Max Hart, as members of the Commission of Inland Fisheries and Game, as well as Major E. F. Gibson, Assistant Attorney-General, and Jos. W. Chinn, Commissioner of Fisheries of that State. West Virginia sent Chairman Vernon E. Johnson, of the Game and Fish Commission, and L. A. Ruckman, president of the Izaak Walton League of Martinsburg. Hon. Seth E. Gordon, president of the American Game Protective Association, Dr. Lewis Radcliffe, Talbott Denmead, and Glenn C. Leach, from the U. S. Bureau of Fisheries, and Dr. M. D'Arcy Magee, Perry Miller, and Edward C. Kemper, representing the District of Columbia, were present.

The Conservation Commissioner of Maryland acted as temporary chairman. In his address in calling the meeting to order, Mr. Earle stated that it originated in Maryland's desire to cooperate with her sister States, Virginia and West Virginia, in working out some satisfactory plan for using the Potomac in common for fishing. He further stated that there was no question of ownership of the Potomac involved, as that had long been settled, but it was hoped that some agreement might be reached whereby the three states could use the waters of the Potomac to the best interests of all concerned. "It seems only fair," said the speaker, "in consideration of the fact that for some 250 miles above Little Falls the Potomac belongs to the State of Maryland, and if Maryland is to permit fishing by

the other two States in this river, she should be given fishing privileges in certain waters of Virginia and West Virginia, such as the Shenandoah River and other tributaries of these States for her anglers, under a reciprocal license system which might be worked out." Mr. Earle then suggested that a permanent chairman be selected, recommending Dr. Magee, who was duly elected.

The chairman, Dr. Magee, then called upon a number of those present, including Mr. Abel Wolman, who discussed the pollution situation in the Potomac and outlined the progress that had been made to date in clearing same. Mr. L. A. Ruckman, of West Virginia, who had urged the meeting, requested that the three States agree on the Potomac River exclusive of the tributaries of West Virginia. Both Judge Snow and Attorney-General Gibson, as well as Max Hart, of Virginia, did not think that Maryland should ask for fishing rights in their waters. Mr. E. Lee LéCompte, State Game Warden for Maryland, and Mr. Denmead, of the Bureau of Fisheries, who was secretary of the meeting, spoke in favor of a reciprocal arrangement.

Hon. Seth E. Gordon and Dr. Radcliffe, of the Bureau of Fisheries, spoke on the subject of a broad policy for the use of this river and the saving of fish therein. Dr. Radcliffe drew an analogy between the Potomac and the Columbia Rivers, and stated that Washington and Oregon had been unable to work out a suitable plan for the conservation of the salmon fishery until Congress stepped in and solved the question of joint usage of the river.

Mr. Earle proposed that a committee from West Virginia and Virginia be appointed by the chairman to make some offer to Maryland in return for use of the Potomac and this report be submitted after luncheon. The resolution which was offered, however, by the two States did not give Maryland any additional rights than she has at present, and was accordingly rejected by Commissioner Earle, who recommended that a committee be appointed from the three States, including the State Law Departments of each State and the Bureau of Fisheries to meet before November 1, and work out some plan which could be submitted to the General Assembly of Virginia, which meets January, 1932. This was unanimously agreed upon, and the chairman appointed Commissioner Earle as chairman, Commissioner A. Willis Robinson, of Virginia, Commissioner Vernon E. Johnson, of West Virginia, and the Attorney-Generals of the three States, as well as Dr. Radcliffe, of the U. S. Bureau of Fisheries. The meeting then adjourned.

MARYLAND FISHERIES

PUBLISHED BIMONTHLY BY CONSERVATION DEPARTMENT,
SWEPSON EARLE, Commissioner.

No. 11

JULY, 1931

[*This publication presents the views and policies of the Conservation Department.*]

CONSERVE THE SPONGE CRAB

REPORTS have reached the office of the Conservation Department relative to an unusual quantity of sponge or egg-bearing female crabs in the waters of Maryland, especially south of the Great Choptank River. While sponge crabs are occasionally found every year in our waters, there is no record of any such number as is being seen above the Potomac and Tangier Sound.

It is believed that the high density of the waters, due to the drought of last year, is the main cause of this influx of sponge crabs in the upper Bay. However, the Commissioner has sent out a letter of instructions to all Deputy Commanders and Inspectors, directing them to see that the law is properly carried out and that the female crab, bearing the egg sponge, is liberated in the waters after being caught, if taken on trot lines or by other methods.

A report from Chief Inspector E. O. Townsend states that in some localities sponge crabs had been taken and the eggs removed. Such violators when caught will be severely dealt with, as it was this practice which was so strongly condemned in Virginia, and through Maryland's efforts was discontinued by the passage of legislation in 1926. Therefore, in order to perpetuate the crab industry, this law must be carried out to the letter in both states and Maryland must certainly do her part in protecting the sponge crabs in our waters.

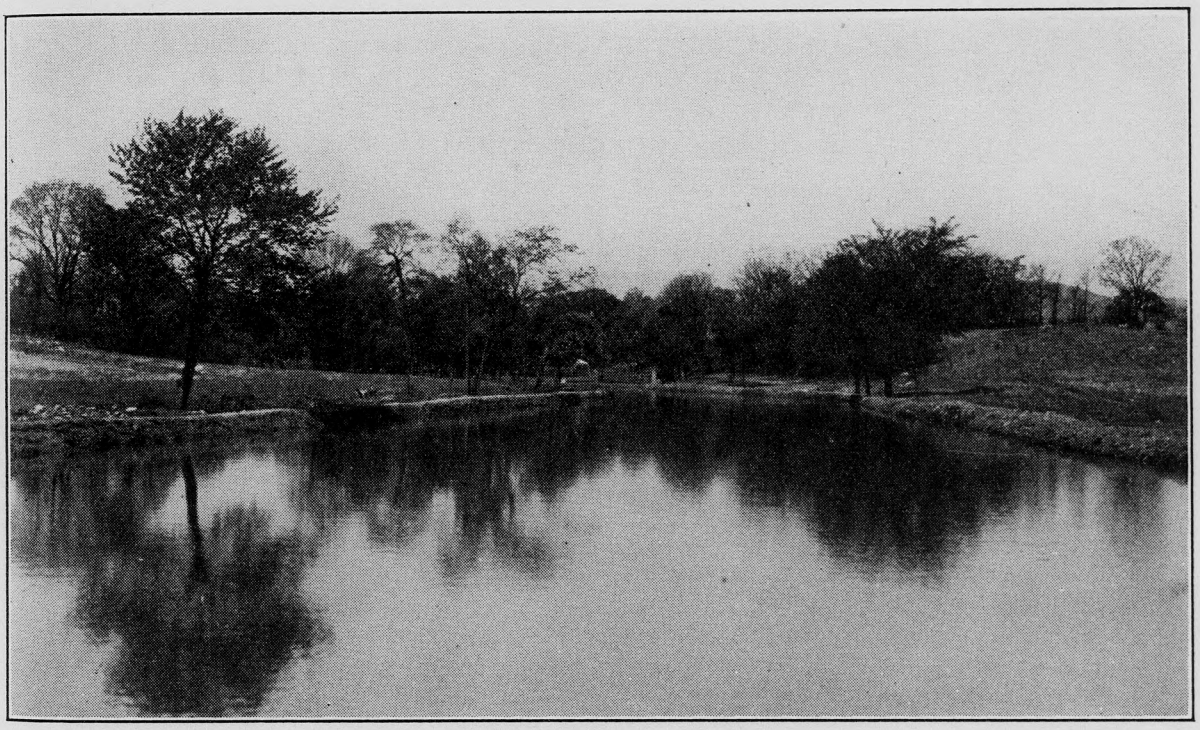
SPORT FISHING IN CHESAPEAKE BAY*

THE United States Bureau of Fisheries issued during the early part of June a small pamphlet on the subject of "Sport Fishing in Chesapeake Bay," which contains much information of interest to the salt-water angler. This pamphlet which is for sale by the Superintendent of Documents, Washington, D. C., for five cents,

* Fishery Circular No. 1—By John C. Pearson, Assistant Aquatic Biologist, U. S. Bureau of Fisheries.

lists the more important of the sport fishing localities with general information regarding facilities available, fishing conditions and type of fish likely to be found. There is also a map of the Bay on which these places are shown, and a brief description of each of the several varieties of game-fishes to be caught in the waters of the Chesapeake.

Interest in sport fishing in the Bay is growing every year, and, as stated in this bulletin, "the facilities for reaching fishing grounds are now as nearly perfect as they can be, but, nevertheless, many more people, who, having an occasional holiday, would gladly enjoy a few days' fishing if they but knew when and where to go to such places as would offer a reasonable chance of catching fish." For such persons this small booklet is an excellent and reliable guide.



New Rearing Pond—Cushwa Springs

STATE REARING PONDS AT CUSHWA SPRINGS EXTENDED

DURING the past few years Cushwa Springs, located in Washington County, have been rented by the Conservation Department for the purpose of rearing brook, rainbow and brown trout. The results obtained at this station were excellent, although the ponds were of small size.

By arrangement with and through the cooperation of the Izaak Walton League, of Hagerstown, additional acreage has been se-

MARYLAND FISHERIES

PUBLISHED BIMONTHLY BY CONSERVATION DEPARTMENT,
SWEPSON EARLE, Commissioner.

No. 11

JULY, 1931

[*This publication presents the views and policies of the Conservation Department.*]

CONSERVE THE SPONGE CRAB

REPORTS have reached the office of the Conservation Department relative to an unusual quantity of sponge or egg-bearing female crabs in the waters of Maryland, especially south of the Great Choptank River. While sponge crabs are occasionally found every year in our waters, there is no record of any such number as is being seen above the Potomac and Tangier Sound.

It is believed that the high density of the waters, due to the drought of last year, is the main cause of this influx of sponge crabs in the upper Bay. However, the Commissioner has sent out a letter of instructions to all Deputy Commanders and Inspectors, directing them to see that the law is properly carried out and that the female crab, bearing the egg sponge, is liberated in the waters after being caught, if taken on trot lines or by other methods.

A report from Chief Inspector E. O. Townsend states that in some localities sponge crabs had been taken and the eggs removed. Such violators when caught will be severely dealt with, as it was this practice which was so strongly condemned in Virginia, and through Maryland's efforts was discontinued by the passage of legislation in 1926. Therefore, in order to perpetuate the crab industry, this law must be carried out to the letter in both states and Maryland must certainly do her part in protecting the sponge crabs in our waters.

SPORT FISHING IN CHESAPEAKE BAY*

THE United States Bureau of Fisheries issued during the early part of June a small pamphlet on the subject of "Sport Fishing in Chesapeake Bay," which contains much information of interest to the salt-water angler. This pamphlet which is for sale by the Superintendent of Documents, Washington, D. C., for five cents,

* Fishery Circular No. 1—By John C. Pearson, Assistant Aquatic Biologist, U. S. Bureau of Fisheries.

lists the more important of the sport fishing localities with general information regarding facilities available, fishing conditions and type of fish likely to be found. There is also a map of the Bay on which these places are shown, and a brief description of each of the several varieties of game-fishes to be caught in the waters of the Chesapeake.

Interest in sport fishing in the Bay is growing every year, and, as stated in this bulletin, "the facilities for reaching fishing grounds are now as nearly perfect as they can be, but, nevertheless, many more people, who, having an occasional holiday, would gladly enjoy a few days' fishing if they but knew when and where to go to such places as would offer a reasonable chance of catching fish." For such persons this small booklet is an excellent and reliable guide.

New Rearing Pond—Cushwa Springs

STATE REARING PONDS AT CUSHWA SPRINGS EXTENDED

DURING the past few years Cushwa Springs, located in Washington County, have been rented by the Conservation Department for the purpose of rearing brook, rainbow and brown trout. The results obtained at this station were excellent, although the ponds were of small size.

By arrangement with and through the cooperation of the Izaak Walton League, of Hagerstown, additional acreage has been se-

cured, and the Department was able to construct a pond 700 feet in length and between 70 and 100 feet in width. Work on the new pond was completed early in May and it has been temporarily stocked with young bass from the Lewistown hatchery.

OYSTERS SPAWN IN BAY WATERS

REPORT has been received from the Chesapeake Biological Laboratory, located at Solomons Island, that oysters have already begun to spawn in the waters of Chesapeake Bay. Oyster larvae have been found in the water in sufficient numbers to indicate that spawning is generally under way. Dr. R. V. Truitt, the Department's biologist, who has charge of the Biological Laboratory, experimented last year with a new type of spat collector which had been used successfully by the U. S. Bureau of Fisheries in Long Island. This collector, a concrete-coated egg-crate partition, was used in Honga river during the spawning season last year and proved more or less successful. A number of the collectors were given to interested oyster planters in the State for use on their private planting grounds, but the results, owing somewhat to failure to get the partitions overboard in time for the peak of spatfall, were indifferent. This year, however, a larger number were distributed to planters at cost in widely separated areas in Maryland waters and results from these plantings will be watched with interest. In this connection, the following letter was sent to all planters such as volunteered to experiment with the collectors, apprizing them of the appearance of oyster spat in the waters and advising them to get the spat collectors overboard at once:

June 30, 1931.

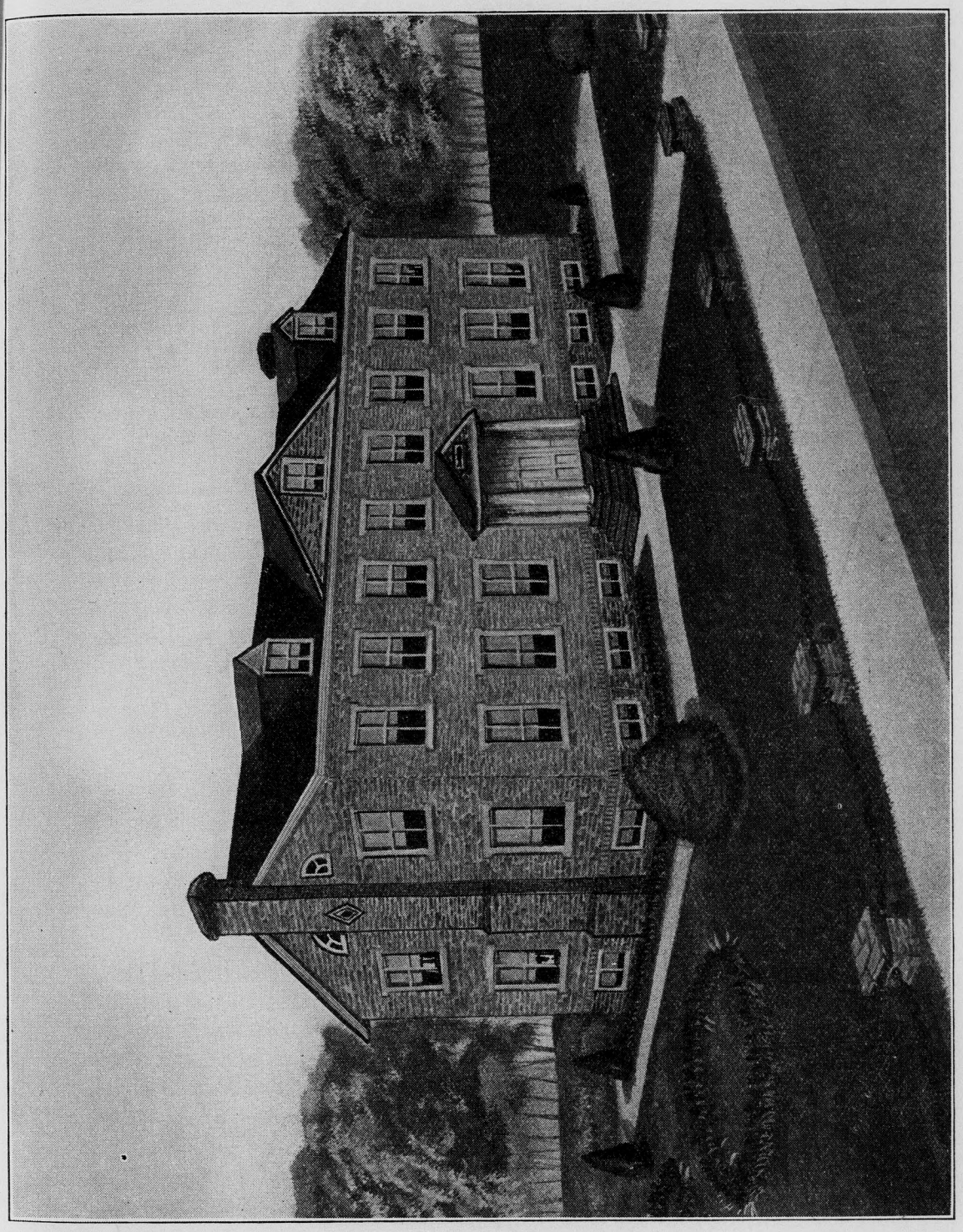
"Dear Sir—The biologist at the Chesapeake Laboratory is finding young oysters (larvae) in the water and states that spawning is going on at a fairly rapid rate. I am writing to advise that your concrete partitions should be planted at your very earliest convenience. Further, I would suggest that you plant them on or near an oyster bed where previously you have known oysters to catch.

While our biologist had some very good results last year, we also had very poor results in certain regions with these spat collectors. We will follow with interest the plantings you and others are making in Maryland and report on the success or failure of same in the fall.

I am sure Dr. Truitt will appreciate any special observations you may make and report to him along these experimental lines.

Yours very truly,

SWEPSON EARLE,
Commissioner.



Sketch of Marine Laboratory Now Under Construction on Solomons Island. Building Overlooks the Patuxent River and Chesapeake Bay.

cured, and the Department was able to construct a pond 700 feet in length and between 70 and 100 feet in width. Work on the new pond was completed early in May and it has been temporarily stocked with young bass from the Lewistown hatchery.

OYSTERS SPAWN IN BAY WATERS

REPORT has been received from the Chesapeake Biological Laboratory, located at Solomons Island, that oysters have already begun to spawn in the waters of Chesapeake Bay. Oyster larvae have been found in the water in sufficient numbers to indicate that spawning is generally under way. Dr. R. V. Truitt, the Department's biologist, who has charge of the Biological Laboratory, experimented last year with a new type of spat collector which had been used successfully by the U. S. Bureau of Fisheries in Long Island. This collector, a concrete-coated egg-crate partition, was used in Honga river during the spawning season last year and proved more or less successful. A number of the collectors were given to interested oyster planters in the State for use on their private planting grounds, but the results, owing somewhat to failure to get the partitions overboard in time for the peak of spatfall, were indifferent. This year, however, a larger number were distributed to planters at cost in widely separated areas in Maryland waters and results from these plantings will be watched with interest. In this connection, the following letter was sent to all planters such as volunteered to experiment with the collectors, apprizing them of the appearance of oyster spat in the waters and advising them to get the spat collectors overboard at once:

June 30, 1931.

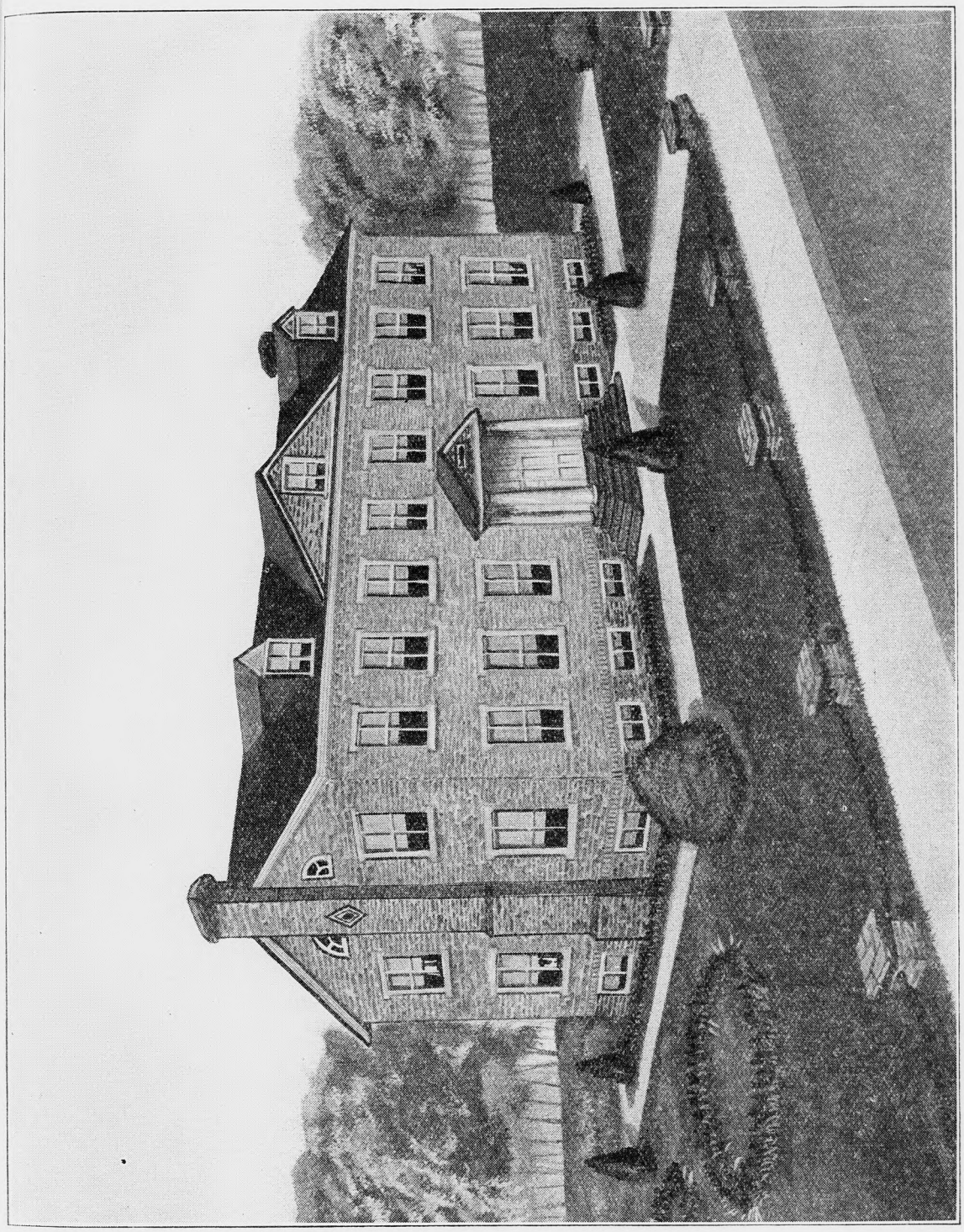
"Dear Sir—The biologist at the Chesapeake Laboratory is finding young oysters (larvae) in the water and states that spawning is going on at a fairly rapid rate. I am writing to advise that your concrete partitions should be planted at your very earliest convenience. Further, I would suggest that you plant them on or near an oyster bed where previously you have known oysters to catch.

While our biologist had some very good results last year, we also had very poor results in certain regions with these spat collectors. We will follow with interest the plantings you and others are making in Maryland and report on the success or failure of same in the fall.

I am sure Dr. Truitt will appreciate any special observations you may make and report to him along these experimental lines.

Yours very truly,

SWEPSON EARLE,
Commissioner.



Sketch of Marine Laboratory Now Under Construction on Solomons Island. Building Overlooks the Patuxent River and Chesapeake Bay.

CONTRACT FOR BIOLOGICAL LABORATORY AWARDED

Under date of June 16, 1931, the contract for the building of the Biological Laboratory at Solomons Island was awarded to James J. Vesely & Company of Baltimore, being the lowest bidder. The amount of this company's bid was $31,316.00. The first bids received, which were advertised and submitted by eight contractors, were opened June 1, but were rejected, due to the fact that they were too high. Some alterations were made in the plans and a saving of $2,000 was effected.

Ground was broken for the erection of the building on the site which was presented to the State of Maryland by the citizens of Calvert County and Solomons Island in June. Under the terms of the contract, this building must be completed in four months, after which time it will be officially accepted and dedicated.

Dr. R. V. Truitt, the Department's biologist, has established his temporary headquarters at Solomons Island and work is now progressing.

HIGH MINERAL CONTENT IN CRAB MEAT

By J. F. Geisler, Sc. D.

Director Research Laboratory, Food Investigation Service; internationally known authority on food chemistry; formerly professor of chemistry of the University of Michigan; chemist for the Dairy Department of New York State Department of Agriculture; official chemist for the New York Mercantile Exchange; food expert, American relief administration.

FAR from being the indigestible food that many people think it, crab meat, because of its high mineral content, is a decided asset to a healthy diet. It contains almost more iodine than is found in any other food and iodine is a very important and necessary adjunct to the human system.

If crab meat contained nothing else of value, this item alone would make it highly desirable. Many serious disturbances within the system are apt to arise when the iodine supply is depleted. Not the least of these is the disfiguring goiter. Because the iodine contained in crab meat is easily assimilated, it furnishes a healthful and pleasant means of introducing this important mineral into the human system.

It is encouraging to realize that the people of the United States are consuming more crab meat every year. Particularly fortunate are those living near the source of supply, for if crabs are bought from a reliable dealer, you are sure of obtaining only the freshest product. In this connection, it is important to buy your crabs from a reputable fish market, for their proprietors are usually men who come from a long line of fishermen. They are therefore

qualified to judge the quality and freshness of the products they are selling.

Crab meat is easy to prepare and may be served in a variety of tempting ways. It is delicious served hot for dinner in the shell—deviled—or made into soups, cocktails and salads. There is no doubt but that its excellent qualities and palatable taste are accounting for its increased popularity with the American people.

Another important element contained to a large degree in crab meat is phosphorus. This is particularly necessary to the nerves of the human system, for where there is insufficient phosphorus, important nerves are apt to degenerate. This may cause polyneuritis, which often has a serious effect upon life itself. Phosphorus also stimulates certain glands and organs, so that its presence in the diet is highly important. The sweet white meat from the body and claws of crabs offers us a very pleasant way of obtaining this mineral.

Lime, too, is present in crab meat, and this element influences the assimilation of the iodine and phosphorus content. Lime is necessary to the proper hardening and strengthening of the bones.

When crab meat is properly prepared and packed it loses none of its valuable mineral content. Due to improved methods of packing and shipping, crab meat is now available the year 'round, but the summer season still remains the best for buying the fresh product.

Careless buying of crab meat, either from a dealer or in a restaurant, may result in serious poisoning to the system, for crabs should only be cooked when they are alive. Be sure your dealer is a reliable one—that his store or restaurant is clean and sanitary—and that it is regularly inspected by health authorities. Then indulge your taste for crabs to its fullest extent.

DRUM FISHING AGAIN POPULAR ON SEASIDE

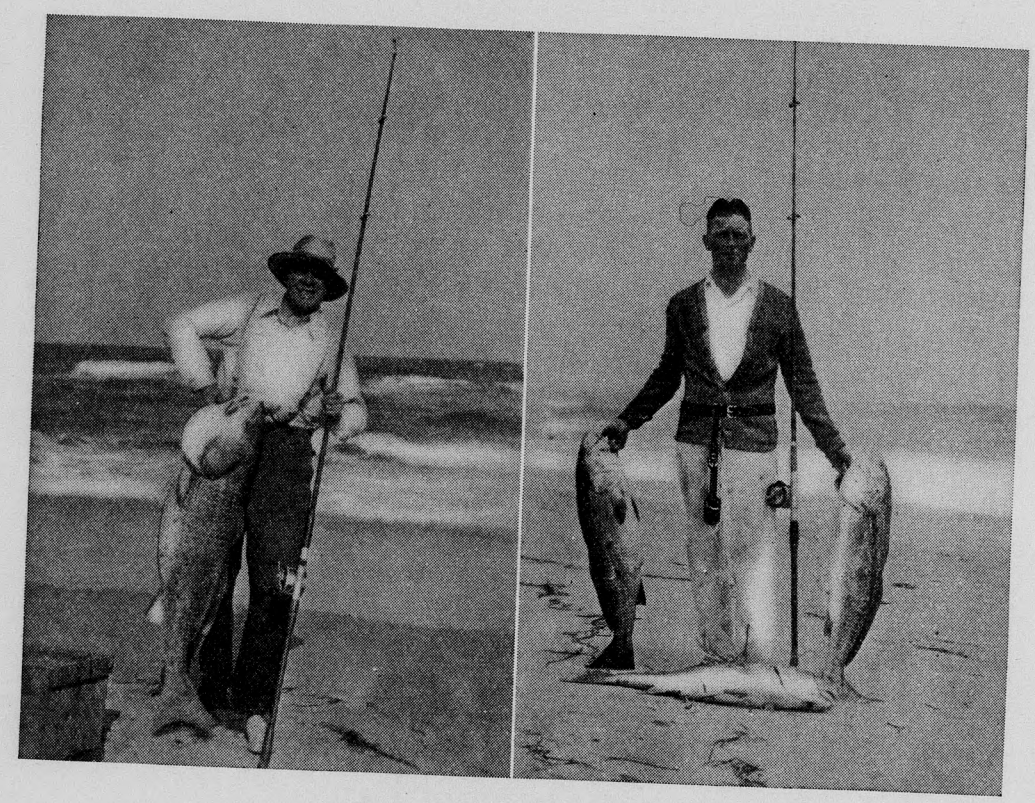
NORTH and south of Ocean City, Maryland's strip of ocean beach, has become one of the most popular fishing resorts in the country for the Red Drum or Channel Bass.

From the middle of May until late in July and again during late August, September and October, this ferocious fighter makes his appearance along our coast, and anglers from all parts of the country try their luck, and most of them have been successful in landing one or more of these big fellows.

The usual method of taking the channel bass and by far the most exciting is by surf casting from the shore, as the big fish feed upon small sea clams in the wash of the surf, where the water is shoal, and when one takes the bait and starts out to sea, the fight is on!

It is a common sight to see a dozen or more automobiles driving down the beach at low tide to the best fishing grounds, which lie from six to twenty miles below Ocean City, and there you will find anglers at intervals along the sand, waiting expectantly for a strike.

The Red Drum caught along our Maryland coast, range from about 10 to 70 pounds. One caught by Mr. K. C. Watson, Baltimore angler, which was entered in the National Field and Stream contest for largest fish, was taken just below Ocean City, and won first prize, weighing 62 pounds.



Scenes At Ocean City